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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,197	07/29/2003	Yosuke Morimoto	1001-017	5679
26272	7590	02/18/2004	EXAMINER	
ROBIN BLECKER & DALEY 2ND FLOOR 330 MADISON AVENUE NEW YORK, NY 10017			MARTINEZ, JOSEPH P	
			ART UNIT	PAPER NUMBER
			2873	

DATE MAILED: 02/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/629,197	MORIMOTO, YOSUKE	
	Examiner	Art Unit	
	Joseph P. Martinez	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,6,8 and 10-13 is/are rejected.
- 7) ☒ Claim(s) 3,4,7 and 9 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
 a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ | 6) <input type="checkbox"/> Other: ____ |

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DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 5-6 and 10-12 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Inoue et al. (5430375).

Re claims 1-2 and 11-12, Inoue et al. teach for example, a position detecting method or a position detecting apparatus (fig. 4) that detects a position of an object, comprising: a position sensor (MR element 22, fig. 1) that outputs a plurality position detecting signals which have different phases respectively that change periodically according a movement of the object (three phase position variation, fig. 5, col. 4, ln. 11-16); a phase converting unit or plurality of phase converting units (magnetic detection elements A1, A2, B1, B2, C1, C2, fig. 5) that generates a plurality of phase converted signals (position detection signals SA, SB and SC, fig. 11) which have different phases respectively by giving each predetermined phase difference to the plurality of position detecting signals (col. 6, ln. 17-19); a first calculating unit (comparators 35, 36 and 37, fig. 12) that obtains first position data corresponding to a position of the object on the basis of the plurality of phase converted signals (col. 6, ln. 48-54); and a second calculating unit (comparators 35, 36 and 37, fig. 12) that obtains second position data corresponding to a position of the object on the basis of the of the plurality of phase converted signals (col. 6, ln. 48-54); and a third calculating unit that

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obtains a position of the object on the basis of the first position data and the second position data (phase identifier 38, fig. 12, col. 6, ln. 48-54).

Re claim 5, Inoue et al. further teach for example, the plural phases of position detecting signals are constituted of four phases of signals, that is, a sine wave, a cosine wave, and positive and negative signals (sinusoidal, cosine-wave, upwardly and downwardly, col. 6, ln. 5-8) obtained by reversing their polarity.

Re claim 6, Inoue et al. further teach for example, wherein the respectively different plural phase differences are phase differences that are changed at the same interval (fig. 11, col. 6, ln. 17-19).

Re claim 10, Inoue et al. further teach for example, the position detecting apparatus detects a position of at least one optical element (group lens 4, fig. 1) in the optical system.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (5430375) in view of Hamada et al. (6226459).

Re claim 13, Inoue et al. teach for example, a position detecting apparatus (fig. 4) that detects a position of an object, comprising: a position sensor (MR element 22, fig. 1) that outputs a plurality position detecting signals which have different phases respectively that change periodically according a movement of the object (three phase

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position variation, fig. 5, col. 4, ln. 11-16); a phase converting unit (magnetic detection elements A1, A2, B1, B2, C1, C2, fig. 5) that generates a plurality of phase converted signals (position detection signals SA, SB and SC, fig. 11) which have different phases respectively by giving each predetermined phase difference to the plurality of position detecting signals (col. 6, ln. 17-19); a first calculating unit (comparators 35, 36 and 37, fig. 12) that obtains first position data corresponding to a position of the object on the basis of the plurality of phase converted signals (col. 6, ln. 48-54); and a second calculating unit (comparators 35, 36 and 37, fig. 12) that obtains second position data corresponding to a position of the object on the basis of the of the plurality of phase converted signals (col. 6, ln. 48-54); and a third calculating unit that obtains a position of the object on the basis of the first position data and the second position data (phase identifier 38, fig. 12, col. 6, ln. 48-54), but fail to implicitly teach an image sensing unit that senses an object image and an optical unit adapted to focus the object image.

However, within the same field of endeavor, Hamada et al. teach for example, an image sensing unit (image blur sensor 8, fig. 1) that senses an object image and an optical unit (image-blur correcting lens 11, fig. 1) adapted to focus the object image (col. 4, ln. 22-37). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the position detecting device of Inoue et al. with the image sensing unit and optical unit of Hamada et al. in order to provide an auto focus.

Re claim 8, Inoue et al. further teach for example, wherein the position sensor comprises a magnetic member periodically magnetized (magnet 20, fig. 4), and a magnetic detector element (magnetic detection elements A1, A2, B1, B2, C1, C2, fig. 5) and outputs a plurality of position detecting signals according to a magnetic change due

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to the movement of the object (position detection signals SA, SB and SC, fig. 11), but fails to implicitly teach the magnetic detector relatively moves with the magnetic member in connection with the movement of the object. However, within the same field of endeavor, Hamada et al. teach for example, the magnetic detector (col. 11, ln. 53-56, wherein Hamada et al. suggest fitting MR sensors to sliders) relatively moves with the magnetic member in connection with the movement of the object. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the position detecting device of Inoue et al. with the MR sensor fitted on the slider of Hamada et al. in order to save space.

Allowable Subject Matter

Claims 3-4, 7 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art taken alone or in combination fails to anticipate or fairly suggest the limitations of the claims, in such a manner that a rejection under 35 USC 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in dependent claims 3-4, 7 and 9.

Specifically regarding claims 3-4, wherein the claimed invention comprises a positioning detecting apparatus comprising a position sensor; phase converting unit; a first, second and third calculating unit; and wherein the condition of $P = P_0 \pm (1/2)^n * P$ is satisfied, as claimed.

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Specifically regarding claim 7, wherein the claimed invention comprises a positioning detecting apparatus comprising a position sensor; phase converting unit; a first, second and third calculating unit; and wherein the respectively different plural phase differences are 22.5° , 45° and 67.5° , as claimed.

Specifically regarding claim 9, wherein the claimed invention comprises a positioning detecting apparatus comprising a position sensor; phase converting unit; a first, second and third calculating unit; and wherein the position sensor comprises an optical scale member having a reflecting surface whose shape periodically changes, and an optical detector that relatively moves with the optical scale member in connection with the movement of the object and outputs plurality of position detecting signals according to quantity of received light from light, which is reflected on the optical scale member that changes due to the movement, among light irradiated to the optical scale, as claimed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph P. Martinez whose telephone number is 571-272-2335. The examiner can normally be reached on M-F 7:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-4883.

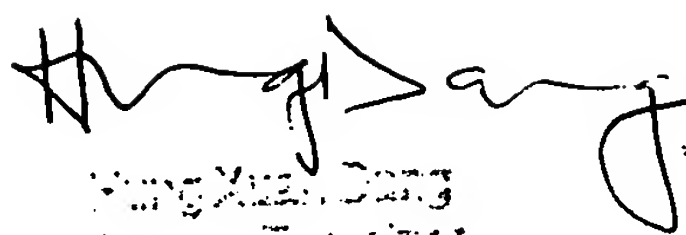
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Yang Xizhi, Dong
1-22-04